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Indian Standard

PETROLEUM BASED PROCESS OILS FOR RUBBER INDUSTRY — SPECIFICATION

ICS 75.100

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 2001

Price Group 2

Rubber Products Sectional Committee, PCD 13

FOREWORD

This Indian standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Rubber Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

Processed oils are used as an extender, plasticizer and process aid. In addition of these oils reduces the viscosity of the rubber compound and facilitate processing and incorporation of filler and ingredients.

The composition of the Committee responsible for formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test of analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PETROLEUM BASED PROCESS OILS FOR RUBBER INDUSTRY — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and methods of tests for three types of oils, namely, aromatic, naphthenic and paraffinic.

2 REFERENCES

The following Indian Standards contain provision which through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated were valid. All standards are subject to revision, and parties to agreements based on the standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
1070 : 1992	Reagent grade water (*third revision*)
1448	Methods of test for petroleum and its products
[P 1] : 1971	Neutralization number by potentiometric titration (*first revision*)
[P 3] : 1984	Aniline point (*second revision*)
[P 10] : 1970	Cloud point and pour point (*first revision*)
[P 25] : 1976	Determination of kinematic and dynamic viscosity (*first revision*)
[P 69] : 1969	Flash and fire point by cleveland (open) cup
7086 (Part 1) : 1973	Methods of sampling and test for rubber compounding ingredients

3 TYPES

3.1 The process oils derived from petroleum may be broadly classified as below:

a) Type 1 — Aromatic;
b) Type 2 — Naphthanic; and
c) Type 3 — Paraffinic.

3.2 This classification is generally based on aromatic content of these hydrocarbon oils. Aromatic oils have the highest plasticizing activity followed by naphthanic and then paraffinic. However, aromatic oils are most staining while paraffinic oils are least staining. The choice of these oils in rubber compound is decided by the various factors such as degree of plasticization required, extent of staining/discolouration tolerable, compatibility with polymers, etc.

4 REQUIREMENTS

4.1 Description

The material shall be uniform and free from foreign matter and other impurities.

4.2 The material shall comply with the requirements given in Table 1 when tested according to the methods prescribed in Col 6 of the Table 1.

5 PACKING AND MARKING

5.1 Packing

The material shall be packed in containers agreed to between the purchaser and the supplier.

Table 1 Requirements of Petroleum Based Oils for Rubber Industry

Sl No.	Characteristic	Requirements			Method of Test, Ref to IS 1448
		Type 1 Aromatic	Type 2 Naphthanic	Type 3 Paraffinic	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Appearance	Viscous greenish brown oil	Light viscous oil	Light amber liquid	Visual
ii)	Density at 15°C	0.98 - 1.01	0.88 - 0.92	0.86 - 0.89	[P : 3]
iii)	Kinematic viscosity (CST) at:				
	a) 40°C	—	18 - 23	28 - 33	[P : 1]
	b) 100°C	18.3 - 26.3	—	—	[P : 25]
iv)	Flash point (COC)°C, *Min*	218	160	190	[P : 69]
v)	Aniline point, °C,	55 *Max*	70–90	90 *Min*	[P : 3]
vi)	Pour point, °C, *Max*	32	–3	–6	[P : 10]

5.2 Marking

5.2.1 Each container shall be marked with the following:

a) Name and grade of the material;
b) Indication of the source of manufacture;
c) Net mass of the material;
d) Month and year of the manufacture; and
e) Lot/Batch number.

5.2.1 *BIS Certification Marking*

The packages may also be marked with the Standard Mark.

5.2.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in IS 7086 (Part 1).

6.2 Number of Tests

Tests for all characteristics of process oils given in Table 1 shall be conducted on individual samples.

6.3 Criteria for Conformity

Lot shall be declared as conforming to the requirements of the specification if all the test results on the individual test samples satisfy the corresponding requirements.

7 TEST METHODS

7.1 Tests shall be conducted according to the methods prescribed in relevant Indian Standard Specifications which is given in Col 6 of Table 1.

7.2 Quality of Reagents

Unless otherwise specified 'pure chemicals' and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Rubber Products Sectional Committee, PCD 13

Organization	*Representative(s)*
Apar Industries Ltd, Mumbai	Shri Manu M. Patel (***Chairman***)
All India Rubber Industries Association, Mumbai	Shri M. M. Patel Shri K.D. Shah (*Alternate*)
Attuned Polymers Pvt Ltd, Mumbai	Shri Mehul Patel Shri Rajendra Ingawale (*Alternate*)
Bayer India Ltd, Mumbai	Shri P. K. chatterjee The Manager (Tech Service) (*Alternate*)
Bengal Waterproof Ltd, Kolkata	Shri B. Banerjee
Dunlop India Ltd, Kolkata	Shri A. K. Bandopadhyay Shri S. K. Nandi (*Alternate*)
Directorate General of Supplies & Disposals, New Delhi	Shri Sunder Lal Shri A. K. Jain (*Alternate*)
Escon Consultants Pvt Ltd, Kolkata	Shri D. Banerjee
Hindustan Latex Ltd, Thiruvanathapuram	Shri S. R. Panicker Shri J. Sahayadasan (*Alternate*)
ICI India Ltd, Kolkata	Shri M. K. Chatterjee
Indian Petrochemicals Corporation Ltd, Vadodara	Shri A. K. Basu Shri R. K. Garg (*Alternate*)
Indian Rubber Mfrs Research Association, Thane	Dr W. Millins Dr M. S. Banerjee (*Alternate*)
J. K. Industries Ltd, Rajasthan	Dr R. Mukhopadhyay Shri V. K. Misra (*Alternate*)
Ministry of Defence (DGQA), New Delhi	Shri A. K. Bandhopadhyay Shri Gautam Gupta (*Alternate*)
Ministry of Foreign Trade, Kolkata	Shri K. J. Srivastava Shri P. P. Saxena (*Alternate*)
Modi Rubber Ltd, Meerut (U.P.)	Shri Markand Mittal Shri S. K. Sharma (*Alternate*)
MRF Ltd, Chennai	Shri Zachariah George Shri A. George John (*Alternate*)
National Test House, Kolkata	Shri D. N. Roy Shri A. K. Chakraborty (*Alternate*)
National Organic Chemicals Industries Ltd, Thane	Shri C. S. Inamdar Shri D. S. Desai (*Alternate*)
Philips Carbon Black Ltd, Distt Bharuch	Dr B. Banerjee Dr S. Chakraborty (*Alternate*)
Phoenix Yule & Co Ltd, Kolkata	Shri T. K. Mukherjee Dr A. Guha (*Alternate*)
RAEI Polymers, Kolkata	Shri B. Dutta
Research, Designs & Standards Organization, Lucknow	Dr S. P. Manik Asstt Inspection Engineer (*Alternate*)
The Rubber Research Institute of India, Kottayam	Shri K. S. Gopalakrishnan Dr M. G. Kumaran (*Alternate*)
Sundaram Industries Ltd, Madurai	Shri R. Raman Shri C. Gopinathan (*Alternate*)

(*Continued on page* 4)

(Continued from page 3)

Organization	*Representative(s)*
Synthetics and Chemicals Ltd, Mumbai	DR R. N. MEHROTRA DR VED PARKASH (*Alternate*)
Swastik Rubber Products, Pune	SHRI A. V. KATE
Tyre Corporation of India Ltd, Kolkata	SHRI B. N. BHATTACHARYYA DR SUNIL KUMAR GHOSH (*Alternate*)
BIS Directorate General	SHRI ANJAN KAR, Director & Head (PCD) [Representing Director General (*Ex-officio*)]

Member-Secretary
SHRI R. P. MISHRA
Joint Director (PCD), BIS

Rubber Chemicals & Compounding Ingredients Subcommittee, PCD 13:5

Organization	*Representative(s)*
Philips Carbon Black Ltd, Distt Bharuch	DR B. BANERJEE (***Convener***) SHRI ARUP MUKERJEE (*Alternate*)
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